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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,589	01/15/2004	Tongbi Jiang	M4065.0717/P717-A	4909

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EXAMINER
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KANG, DONGHEE

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/757,589

Applicant(s)

JIANG ET AL.

Examiner

Donghee Kang

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 and 63-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-19, 22-27, 63-67 and 70-75 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 20, 21, 68 and 69 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/15/04 &amp; 10/27/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Priority***

1. This application appears to be a division of Application No. 10/373,785, filed February 27, 2003. A later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in an earlier or parent application is known as a divisional application or "division." The divisional application should set forth the portion of the earlier disclosure that is germane to the invention as claimed in the divisional application.

### ***Information Disclosure Statement***

2. Acknowledgment is made of receipt of applicant's Information Disclosure Statement (PTO-1449) filed January 15 & October 27, 2004.

3.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims **1-3, 5, 8-9, 13-17, 19, 22-23 & 27** are rejected under 35 U.S.C. 102(e) as being anticipated by Uya (US 2003/0122209).

Re claims 1, 14, & 15, Uya teaches a CMOS imaging device, comprising (Fig.5A):

a semiconductor substrate (2); a plurality of photodiodes (3) at beneath an upper surface of said semiconductor substrate; forming a color filter layer (31) wherein an individual color filter is formed over a corresponding one of a plurality of photodiodes;

forming a plurality of photoconductors (paragraph 0046), wherein each photoconductor is formed between the corresponding individual color filter and the corresponding said photodiode; and forming at one fluidic material (17) between each of said photoconductors, said at least one fluidic material having a refractive index lower than the refractive index of each of said photoconductors, wherein said refractive index of each said photoconductor operates to propagate light within an interior space of each said photoconductor to each corresponding said photo diodes, said interior space defined by the outer surface of each said photoconductor.

Re claims 2 & 16, Uya teaches each said photoconductor receives and propagates light to a single corresponding photo diode.

Re claims 3 & 17, Uya teaches the photoconductor comprises silicon oxide or silicon nitride (paragraph 0039).

Re claims 5 & 19, Uya teaches the outer surface of each said photoconductor are selected from the group consisting of substantially straight, substantially diagonal and curved outer surface.

Re claims 8 & 22, Uya teaches said at least one fluidic material comprises a non-gaseous fluid.

Re claims 9 & 23, Uya teaches there is minimal space between the upper portions of each adjacent photoconductor.

Re claims 13 & 27, Uya teaches the diameter of an upper portion of each said photoconductor is greater than the diameter at the base of each respective photoconductor.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims **4, 10-12, 18, 24-26, 63-67 & 70-75** are rejected under 35 U.S.C. 103(a) as being unpatentable over Uya in view of Mikolas (US 2003/0136759).

Re claims 10-11, 24-25 & 72-73, Uya does not teach the outer perimeter of an upper portion of each said photoconductor comprising at least three substantially straight edges. Mikolas teaches in Fig.7 the photoconductor has the outer perimeter of an upper portion of each said photoconductor comprising at least three substantially straight edges. Therefore, it would have been obvious to one of ordinary skill in the art to choose and design the geometry of photoconductor in order to obtain a desired imaging device.

Re claims 4, 12, 18, 26, 66, & 74, Uya does not teach a nitride liner is provided around an outer perimeter of each said photoconductor. Mikolas teach in Fig.3 the photoconductor including oxide 25 and linear 30. Therefore, it would have been obvious

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to one of ordinary skill in the art at the time the invention was made to form the photoconductor having linear in order to inhibit a scattering of light.

Neither Uya nor Mikolas teaches the linear is made of nitride. It would have been obvious to one of ordinary skill in the art to form the linear using nitride, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as matter of obvious design choice. In re Leshin, 125 USPQ 416.

Re claim 63, Uya teaches the substantially claimed structure as applied claim 15 except that the imaging device is coupled to a processor.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple the imaging device to the process or in order to operate properly the imager system.

Re claim 64, Uya teaches each said photoconductor receives and propagates light to a single corresponding photo diode.

Re claim 65, Uya teaches the photoconductor comprises silicon oxide or silicon nitride (paragraph 0039).

Re claim 67, Uya teaches the outer surface of each said photoconductor are selected from the group consisting of substantially straight, substantially diagonal and curved outer surface.

Re claim 70, Uya teaches said at least one fluidic material comprises a non-gaseous fluid.

Re claim 71, Uya teaches there is minimal space between the upper portions of each adjacent photoconductor.

Re claim 75, Uya teaches the diameter of an upper portion of each said photoconductor is greater than the diameter at the base of each respective photoconductor.

***Allowable Subject Matter***

8. Claims 6-7, 20-21 & 68-69 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Prior art reference, taken along or in combination, do not teach or render obvious that said fluidic material is a gas.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 571-272-1656. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Donghee Kang, Ph.D.  
Primary Examiner  
Art Unit 2811

dhk